AEROLOGICAL OBSERVATIONS FOR THE YEAR 1932

[Aerological Division, W. R. Gregg, in charge]

By L. T. SAMUELS

Free-air temperatures during the year averaged above normal except at San Diego and in the lower levels at Ellendale, Norfolk, and Washington (Table 1). Free-air relative humidities averaged mostly above normal except at Omaha and Washington.

Kite flying was discontinued at Due West, S. C., during May and an airplane observation station established at Atlanta, Ga., during July. Pilot-balloon observations were made from two to four times daily at 75 Weather Bureau stations at the end of the year as compared to 70 stations at the beginning of the year. The average number of daily soundings at these stations was 246.

In connection with the International Polar Year program (August, 1932, to August, 1933), 91 sounding-balloon observations were made at 3 stations between August and December. Seventy-one of the meteorographs sent up in these observations have been found and returned. The records indicate that the balloons entered the stratosphere in nearly every case. The special station established at Point Barrow, Alaska, for the Polar Year has reported a total of 200 pilot-balloon observations from September 15, to the end of 1932; more than 900 cloud observations and more than 2000 photographs of the aurora. Five airplane observations to between 5 and 6 km are being made monthly at Fairbanks, Alaska, during the Polar Year period.

TABLE 1.—*Free-air temperatures and relative humidities during the year 1932*

TEMPERATURE (° C.)

Altitude (meters) m. s. l.	Chicago, Ill. (187 meters)[1]		Cleveland, Ohio (246 meters)[1]		Dallas, Tex. (146 meters)[2]		Ellendale, N. Dak. (444 meters)		Norfolk, Va. (3 meters)[3]		Omaha, Nebr. (300 meters)[4]		Pensacola, Fla. (2 meters)[3]		San Diego, Calif. (9 meters)[3]		Washington, D. C. (2 meters)[3]	
	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal	Mean	Departure from normal
Surface	6.8	(5)	7.4	(5)	14.2	(5)	5.2	−0.4	14.1	−0.5	6.3	(5)	18.4	+0.2	16.1	−1.8	10.9	−1.6
500	7.6	(5)	8.5	(5)	15.9	(5)	5.1	−.4	12.9	−.8	7.2	(5)	17.8	+.6	14.2	−1.5	10.9	−.1
1,000	6.8	+0.2	7.2	+0.6	15.2	+1.2	4.5	−.1	11.0	−.6	8.6	+0.6	16.0	+.8	15.2	−.7	9.9	+.7
1,500	5.1	+.5	4.9	+.3	13.4	+1.2	3.4	+.2			7.6	+1.0						
2,000	3.1	+.6	2.9	+.4	11.0	+1.0	1.3	+.3	6.9	− .1	5.9	+1.5	11.8	+1.0	12.2	−0.3	6.2	+1.1
2,500	.8	+.6	.7	+.5	8.4	+.9	−1.1	+.5			3.3	+1.5						
3,000	−1.6	+.7	−1.7	+.6	5.8	+.9	−3.8	+.6	2.7	+.4	.5	+1.5	7.0	+1.0	6.7	−.1	2.1	+1.3
4,000	−7.3	+.3	−7.3	+.3	−.3	+.4	−9.3	+.7	−2.2	+.7	−5.9	+.9	2.1	+2.0	.7	0	−3.1	+1.6
5,000	−13.8	−.3	−14.0	−.5	−6.9	−.6	−14.9	+.8	−8.3	+.5	−12.7	+.1	−3.0	+1.9	−6.1	0	−8.5	+1.0

RELATIVE HUMIDITY (PER CENT)

Surface	78	(5)	81	(5)	80	(5)	73	+1	73	+1	82	(5)	83	+2	71	+4	71	+2
500	70	(5)	74	(5)	69	(5)	72	+1	69	+5	75	(5)	76	+3	71	+4	62	−1
1,000	63	−2	70	+5	62	0	66	+2	64	+4	60	−1	72	+5	53	+2	56	−3
1,500	59	−1	68	+8	59	+5	62	+3			55	−2						
2,000	56	0	62	+6	56	+8	61	+4	58	+5	51	−4	63	+6	36	+2	52	−4
2,500	54	+2	57	+5	52	+7	59	+3			51	−4						
3,000	50	0	53	+3	49	+7	59	+4	51	+5	51	−4	57	+8	30	+2	45	−3
4,000	46	0	48	+2	46	+7	53	0	48	+6	49	−4	54	+5	26	+1	37	−9
5,000	43	−1	46	+2	45	+10	51	+1	47	+10	45	−7	55	+8	22	−1	27	−7

[1] Temperature and humidity departures based on normals of Royal Center, Ind.
[2] Temperature departures based on normals determined by interpolating between those of Groesbeck, Tex., and Broken Arrow, Okla. Humidity departures based on normals of Groesbeck, Tex.
[3] Naval air stations.
[4] Temperature and humidity departures based on normals of Drexel, Nebr.
[5] Surface and 500-meter departures omitted because of difference in time between airplane observations and those of kites upon which the normals are based.

Weather Bureau airplane observations made near 5 a. m.; Navy airplane observations near 7 a. m.; Ellendale kite observations near 9 a. m. (75th meridian time).

RIVERS AND FLOODS

By RICHMOND T. ZOCH

[River and Flood Division, Montrose W. Hayes, in charge]

In December, 1932, floods occurred on the Atlantic Slope from southern Virginia southward to southern Georgia, in the East Gulf of Mexico States, in the Ohio Basin, and in the tributaries of the Mississippi River south of Cairo. None of them reached a height in December that would make them of major importance, except the one in the Pearl River of Mississippi, which is described as follows by the official in charge of the Weather Bureau office in Meridian, Miss.:

December was wet throughout the basin of the Pearl River. There were two periods of particularly heavy precipitation. The first, in which the greatest falls occurred, was from the 9th to the 16th; the excesses were most marked in the upper basin of the Pearl. The second was from the 24th to the 28th. Notably heavy precipitation occurred at Canton, where the amount from the 9th to the 16th was 8.70 inches, and for the month was 13.37; at Edinburg, where the amount from the 9th to the 16th was 12.41, and for the month was 17.44; and at Jackson, where 9.16 occurred from the 9th to the 16th, and 14.50 occurred in the entire month.

Freezing temperatures prevailed from the night of the 15th through the night of the 19th. The rain in this period froze as it fell and the result was equivalent to the holding back of the water from a rainstorm amounting to about two inches, which would have entered the Pearl River at Jackson, and immediately above, at the time of crest stages. This retarding of the run-off reduced the flood heights that would have occurred had the temperatures been above freezing. A thaw began during the forenoon of the 20th and continued through the night of the 20th-21st, and all ice had disappeared by the morning of the 21st. The water released by the thaw entered a falling river, and merely retarded the rate of fall.

At Jackson the flood was the severest since May 30, 1909, when the crest was 35.3 feet. The highest stage of record at Jackson

was 37.2 feet on April 1, 1902. While the floods of 1902 and 1909 were higher than the one in 1932, the latter, having a crest of 35.2 feet at Jackson, was undoubtedly the most destructive, on account of the increase in the population of Jackson and the adjacent territory. It is reported that over 500 families were driven from their homes by the water, and, while there is no record of deaths by drowning, exposure caused considerable sickness.

According to a newspaper dispatch, the Rio Grande at San Marcial, N. Mex., was, on December 28, blocked by ice for the second time in history. The water backed up by the gorge interrupted traffic over the Albuquerque-San Marcial highway.

Table of flood stages in December, 1932

[All dates in December unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ST. LAWRENCE DRAINAGE					
Flint: Columbiaville, Mich	*Feet* 8	27	27	*Feet* 8.2	27.
ATLANTIC SLOPE DRAINAGE					
James:					
Columbia, Va	15	29	30	20.5	29.
Richmond, Va	8	29	30	11.0	29.
Roanoke:					
Randolph, Va	21	29	30	23.6	30.
Weldon, N. C	31	27	Jan. 1	38.3	31.
Scotland Neck, N. C	23	27	Jan. 2	28.3	31.
Williamston, N. C	10	30	(1)	12.2	Jan. 5.
Neuse:					
Neuse, N. C	15	28	29	15.3	28.
Smithfield, N. C	14	15	18	16.0	16.
		27	31	15.8	30.
Cape Fear: Elizabethtown, N. C	20	14	19	27.2	17.
		26	(1)	26.2	29.
Peedee:					
Cheraw, S. C	27	15	16	28.9	15.
		26	30	30.2	27.
Mars Bluff Bridge, S. C	17	15	(1)	20.7	31.
Poston, S. C	18	19	(1)	20.2	22.
Saluda:					
Pelzer, S. C	7	25	31	9.9	27.
Chappells, S. C	14	12	17	17.2	14.
		27	(1)	18.6	29.
Broad: Blairs, S. C	15	15	15	15.6	15.
		26	30	18.0	27.
Catawba: Catawba, S. C	11	25	26	12.2	26.
Wateree: Camden, S. C	24	27	31	27.5	28.
Santee:					
Rimini, S. C	12	Nov. 27	4	13.6	1.
		14	(1)	16.1	31.
Ferguson, S. C	12	1	6	13.1	3.
		15	(1)	13.9	20-22.
Broad: Carlton, Ga	15	13	13	16.0	13.
Savannah: Ellenton, S. C	14	13	(1)	23.1	31.
Altamaha: Charlotte, Ga	12	26	28	12.3	27.
EAST GULF OF MEXICO DRAINAGE					
Chattahoochee:					
Norcross, Ga	16	13	13	16.8	13.
		27	30	20.0	29.
West Point, Ga	19	29	Jan. 1	21.9	30.
Apalachicola: Blountstown, Fla	15	18	25	17.7	22.
		30	Jan. 16	20.8	Jan. 4.
Oostanaula:					
Resaca, Ga	22	13	20	26.3	15.
		28	(1)	31.2	29.
Rome, Ga	30	13	15	32.0	14.
		17	18	31.8	18.
		28	(1)	33.8	30.
Etowah: Canton, Ga	17	12	13	23.5	12.
		26	30	25.0	28.
Coosa:					
Mayos Bar Lock, Ga	28	13	21	35.7	14.
		27	(1)	37.0	30.
Gadsden, Ala	22	13	(1)	30.1	18.
Lock No. 4, Lincoln, Ala	17	13	(1)	23.2	18.
Wetumpka, Ala	45	28	(1)	48.9	30.
Cahaba: Centerville, Ala	25	12	14	28.0	13.
		17	18	27.0	17.
		28	29	26.5	28.

[1] Continued into January, 1933.

Table of flood stages in December, 1932—Continued

[All dates in December unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE—CON.					
Alabama:					
Montgomery, Ala	35	17	(1)	49.5	31.
Selma, Ala	35	17	(1)	50.3	31.
Millers Ferry, Ala	35	17	(1)	51.0	31.
Black Warrior: Lock No. 10, Tuscaloosa, Ala	46	12	19	61.0	13.
		28	31	55.2	29.
Tombigbee:	*Feet*			*Feet*	
Aberdeen, Miss	34	12	18	38.4	15.
Columbus, Miss	25	14	19	26.8	16-17.
Lock No. 4, Demopolis, Ala	39	13	(1)	62.7	22.
Lock No. 3, Ala	33	Nov. 27	5	43.6	2.
		12	(1)	60.6	26.
Lock No. 2, Ala	46	14	(1)	62.5	26-27.
Lock No. 1, Ala	31	1	6	32.7	4.
		14	(1)	44.4	29.
Chickasawhay:					
Enterprise, Miss	21	16	16	21.1	16.
		28	31	27.2	29.
Shubuta, Miss	26	18	21	27.0	19.
		30	Jan. 4	31.8	Jan. 1.
Pascagoula: Merrill, Miss	18	28	Jan. 5	18.7	Jan. 1.
Pearl:					
Edinburg, Miss	20	12	22	26.0	14-15.
		25	(1)	23.1	29.
Jackson, Miss	20	12	Jan. 18	35.2	19.
Monticello, Miss	15	13	Jan. 16	25.1	23-24.
Columbia, Miss	18	17	Jan. 16	25.7	26.
West Pearl: Pearl River, La	13	17	(1)	16.5	31.
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Illinois: Peru, Ill	14	24	Jan. 5	17.0	25.
Missouri Basin					
Osage: Osceola, Mo	20	27	27	20.0	27.
Ohio Basin					
Walhonding: Walhonding, Ohio	8	31	31	9.5	31.
Olentangy: Delaware, Ohio	9	31	31	10.7	31.
Scioto:					
La Rue, Ohio	11	31	31	12.4	31.
Bellpoint, Ohio	9	31	31	9.4	31.
Stillwater: Pleasant Hill, Ohio	13	31	31	15.0	31.
Mad: Springfield, Ohio	11	31	31	11.4	31.
West Fork:					
Elliston, Ind	19	26	29	21.0	27.
Edwardsport, Ind	12	10	13	14.7	11.
		25	(1)	17.8	29.
White: Decker, Ind	18	31	(1)	18.2	31.
Wabash:					
La Fayette, Ind	13	9	10	14.6	9.
		25	28	17.5	26.
Covington, Ind	16	10	11	17.0	10.
		26	29	19.9	28.
Terre Haute, Ind	14	27	(1)	15.7	31.
Mount Carmel, Ill	16	29	(1)	17.7	31.
North Fork: Mendota, Va	8	28	29	11.0	28.
Pigeon: Newport, Tenn	6	28	29	12.0	28.
French Broad:					
Asheville, N. C	4	26	30	5.2	28.
Dandridge, Tenn	12	28	29	14.7	28.
Little Tennessee: McGhee, Tenn	20	28	29	25.5	29.
Hiawassee: Charleston, Tenn	22	28	30	28.5	29.
Elk: Fayetteville, Tenn	14	14	14	14.2	14.
		31	31	14.0	31.
Tennessee:					
Knoxville, Tenn	20	29	29	20.6	29.
Loudon, Tenn	22	29	30	24.5	29.
Chattanooga, Tenn	30	29	(1)	37.6	31.
Bridgeport, Ala	18	29	(1)	25.0	31.
Guntersville, Ala	25	29	(1)	30.3	31.
Florence, Ala	18	31	(1)	18.4	31.
Riverton Lock, Ala	33	15	19	34.8	17.
		30	(1)	35.7	31.
Savannah, Tenn	32	16	19	33.0	17.
		31	(1)	33.4	31.
White Basin					
Black:					
Poplar Bluff, Mo	14	31	Jan. 2	14.3	31.
Block Rock, Ark	14	25	25	16.0	25.
		31	(1)	21.8	31.
White: Batesville, Ark	23	27	27	24.7	27.

Table of flood stages in December, 1932—Continued

[All dates in December unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
Arkansas Basin					
Neosho: Fort Gibson, Okla	22	26	26	22.0	26.
Petit Jean: Danville, Ark	20	31	Jan. 2	22.9	Jan. 1.
Arkansas: Fort Smith, Ark	22	26	27	22.8	26.
Red Basin	Feet			Feet	
Sulphur: Ringo Crossing, Tex	20	31	(1)	22.0	31.
Lower Mississippi Basin					
St. Francis:					
Chaonia, Mo	22	25	27	29.1	25.
		31	(1)	24.5	31.
Fisk, Mo	20	25	(1)	24.2	27.
St. Francis, Ark	18	30	(1)	22.5	31.
Tallahatchie: Swan Lake, Miss	24	16	(1)	31.3	31.
Ouachita: Arkadelphia, Ark	12	31	(1)	19.8	31.
WEST GULF OF MEXICO DRAINAGE					
Trinity: Dallas, Tex	28	24	25	33.2	25.
PACIFIC SLOPE DRAINAGE					
Columbia Basin					
Long Tom: Monroe, Oreg	10	21	30	12.6	25.

[1] Continued into January, 1933.

Statement of Flood Losses

ATLANTIC SLOPE DRAINAGE

JAMES RIVER IN VIRGINIA

Tangible property totally or partially destroyed	$125
Matured crops	4,500
Livestock and other movable property	100
Suspension of business, including wages of employees	2,000

ROANOKE RIVER IN NORTH CAROLINA

Tangible property totally or partially destroyed	2,000
Matured crops	10,000
Suspension of business, including wages of employees	6,000

PEEDEE RIVER IN SOUTH CAROLINA

Matured crops	500
Livestock and other movable property	230
Suspension of business, including wages of employees	14,125

SALUDA RIVER IN SOUTH CAROLINA

Suspension of business, including wages of employees	300

CATAWBA RIVER IN SOUTH CAROLINA

Tangible property totally or partially destroyed	1,200
Suspension of business, including wages of employees	300

SANTEE RIVER IN SOUTH CAROLINA

Suspension of business, including wages of employees	100

SAVANNAH RIVER IN GEORGIA AND SOUTH CAROLINA

Matured crops	3,000

ALTAMAHA RIVER IN GEORGIA

Matured crops	1,000

EAST GULF OF MEXICO DRAINAGE

CHATTAHOOCHEE RIVER IN ALABAMA AND GEORGIA

Tangible property totally or partially destroyed	3,000
Prospective crops	3,000
Livestock and other movable property	2,000
Suspension of business, including wages of employees	10,000

APALACHICOLA RIVER IN FLORIDA

Tangible property totally or partially destroyed	$1,200
Livestock and other movable property	900
Suspension of business, including wages of employees	3,000

OOSTANAULA RIVER IN GEORGIA

Tangible property totally or partially destroyed	4,000
Matured crops	1,200
Livestock and other movable property	500
Suspension of business, including wages of employees	5,000

ETOWAH RIVER IN GEORGIA

Tangible property totally or partially destroyed	20,000

COOSA RIVER IN ALABAMA

Matured crops	10

CAHABA RIVER IN ALABAMA

Livestock and other movable property	25

ALABAMA RIVER IN ALABAMA

Tangible property totally or partially destroyed	50
Suspension of business, including wages of employees	100

PASCAGOULA RIVER IN MISSISSIPPI

Tangible property totally or partially destroyed	1,100
Suspension of business, including wages of employees	1,000

PEARL RIVER IN MISSISSIPPI

Tangible property totally or partially destroyed	92,800
Matured crops	12,200
Prospective crops	1,200
Livestock and other movable property	39,600
Suspension of business, including wages of employees	74,500

MISSISSIPPI SYSTEM

MISSOURI BASIN

OSAGE RIVER IN MISSOURI

Tangible property totally or partially destroyed	150
Matured crops	300
Livestock and other movable property	500

OHIO BASIN

WABASH RIVER IN INDIANA

Matured crops	3,000
Suspension of business, including wages of employees	500

HOLSTON RIVER IN TENNESSEE

Tangible property totally or partially destroyed	550
Matured crops	120
Suspension of business, including wages of employees	25

PIGEON RIVER IN TENNESSEE

Tangible property totally or partially destroyed	5,000
Matured crops	200
Prospective crops	1,500
Suspension of business, including wages of employees	1,200

TENNESSEE RIVER IN ALABAMA AND TENNESSEE

Tangible property totally or partially destroyed	4,000
Prospective crops	900
Livestock and other movable property	500
Suspension of business, including wages of employees	12,500

WHITE BASIN

BLACK RIVER IN MISSOURI

Livestock and other movable property	500
Suspension of business, including wages of employees	1,500

ARKANSAS BASIN

NEOSHO RIVER IN OKLAHOMA

Tangible property totally or partially destroyed	1,800
Suspension of business, including wages of employees	500

ARKANSAS RIVER IN ARKANSAS

Tangible property totally or partially destroyed	$300
Matured crops	1,000
Prospective crops	1,000
Livestock and other movable property	25
Suspension of business, including wages of employees	500

ESTIMATED VALUE OF PROPERTY SAVED BY WARNINGS

ATLANTIC SLOPE DRAINAGE

James River in Virginia	$11,250
Roanoke River in North Carolina	15,000
Neuse River in North Carolina	1,000
Cape Fear River in North Carolina	1,500
Peedee River in South Carolina	15,150
Congaree River in South Carolina	1,000
Catawba River in South Carolina	$14,000
Santee River in South Carolina	4,350
Savannah River in Georgia and South Carolina	1,000
Altamaha River in Georgia	10,000

EAST GULF OF MEXICO DRAINAGE

Chattahoochee River in Alabama and Georgia	3,000
Apalachicola River in Florida	2,000
Etowah River in Georgia	25,000
Pascagoula River in Mississippi	5,000
Pearl River in Mississippi	73,000

MISSISSIPPI SYSTEM

OHIO BASIN

Tennessee River in Alabama and Tennessee	100,000
Total	282,250

THE WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[By the Marine Division, W. F. McDonald in charge]

NORTH ATLANTIC OCEAN

By F. A. YOUNG

Atmospheric pressure.—Pressures were below normal during December, 1932, over the middle and eastern Atlantic. The principal area of deficiency was central well northward over Iceland, due to the persistence of the dominant Icelandic LOW. A deficiency of .07 inch in average pressure at Cape Gracias is also noteworthy for that region where barometer changes are relatively small.

The Atlantic HIGH was weakened, from the Azores eastward, but was stronger over the western portion of the ocean, with average pressures highest between Bermuda and Cape Hatteras. The largest excess in monthly averages lay somewhat farther north, however, over the Straits of Belle Isle. (See Table 1.)

The contrast in pressures thus revealed between Central American waters and the region of Cape Hatteras explains the noteworthy intensification of trade wind movement over the Caribbean Sea, where winds of force six were common during December.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic and its shores, December, 1932*

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
Julianehaab, Greenland	29.49	+0.02	30.16	8	28.80	27
Reykjavik, Iceland	29.31	−.41	30.51	10	28.28	16
Lerwick, Shetland Islands	29.80	+.08	30.53	9,10	28.42	3
Valencia, Ireland	29.86	−.08	30.55	25	28.96	31
Lisbon, Portugal	30.06	−.05	30.56	24	29.44	10
Madeira						
Horta, Azores	30.05	−.09	30.46	1,2	29.46	30
Belle Isle, Newfoundland	29.88	+.18	30.50	10	29.20	26
Halifax, Nova Scotia	30.05	+.10	30.48	11,17	29.40	31
Nantucket	30.13	+.08	30.58	17	29.42	31
Hatteras	30.20	+.07	30.57	22	29.73	31
Bermuda	30.17	+.05	30.38	22,23	29.94	1,5
Turks Island	30.05	+.02	30.14	21,22	29.88	17
Key West	30.11	+.03	30.27	2	29.98	12
New Orleans	30.12	−.01	30.54	31	29.77	30
Cape Gracias, Nicaragua	29.91	−.07	29.98	16	29.86	12,24

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observations, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

Cyclones and gales.—December showed a further increase in general storminess as compared with preceding months, and gales were widespread across the main steamer lanes, notably from the 11th to 13th, 18th to 22d, and on the last two days of the month. Winds of gale force were reported from some part of the North Atlantic on all but five days in the month.

Deep cyclonic storms moved slowly across the more northern latitudes. A succession of waves of low pressure originating along a wide extent of the American coast swept eastward over the latitudes that are normally occupied by a rather persistent belt of high pressure. Twice during the month, between the 8th and 13th and from the 25th to 27th, these troughs developed into distinct cyclonic centers well out in the ocean southeast of Bermuda, and gales were reported southward nearly to the thirtieth parallel in that region on the 12th. Chart VIII, for December 9, shows an early stage of this storm.

Charts IX, X, and XI show intensified developments in the major cyclonic systems over the northern part of the Atlantic, on the 14th, 22d, and 31st. The situation depicted at the close of the month had already caused a severe gale, reaching hurricane force, on the previous day, as reported by the British S. S. *Holystone*, near 36 N., 26 W., and storm conditions continued beyond the end of December well into the New Year.

Hurricane winds also occurred within the area north of the 42d parallel, and 350 to 700 miles east of Cape Race on the 19th, as reported by the German S. S. *New York* and the Norwegian S. S. *Equatore*, both eastbound to channel ports. These conditions attended a sharp development that originated near Cape Hatteras on the 17th and moved rapidly northeastward to merge with the more extensive and persistent low-pressure systems that dominated the waters north of latitude 45° from the 13th until the end of the month.

Fog.—The distribution of fog was most unusual during December, as this condition was reported on 10 days in the northwestern part of the Gulf of Mexico and on only 2 days off the Grand Banks. Fog occurred on 6 days between the thirty-fifth and fortieth parallels and the seventieth and seventy-fifth meridians; on 5 days in the 5-degree square south of Nova Scotia, and on 1 or 2 days over other parts of the northern steamer lanes.